



iPad Air LTE Teardown

Teardown of the iPad Air, released November 1, 2013.

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INTRODUCTION

It's All Hallows' Eve, the ghosts are out, and there's a spooky chill in the—nope, that's just Apple's latest ghoul, the iPad Air. Time to gut our new toy and carve it into a bone-chilling Apple-lantern.

While our [cobbers](#) down under don't celebrate Halloween quite like we do, they *do* live in the future, meaning they get all the fun stuff before us. So we packed a [port](#) and headed over to visit our good friends at [MacFixit Australia](#) for some teardown shenanigans. We also called on the stunning insight of our buddies from [Chipworks](#) to help identify all the fun things we found inside! We put our skulls together to show you just what confers [the power of lightness](#).

Check our [Facebook](#) for repair treats, get a kick out of our [Instagram](#) tricks, and show off your haul on [Twitter](#).

[video: <https://www.youtube.com/watch?v=8HU4Z3Cj7J4>]



TOOLS:

- [iOpener](#) (1)
- [iFixit Opening Picks set of 6](#) (1)
- [Suction Handle](#) (1)
- [iFixit Opening Tools](#) (1)
- [Phillips #00 Screwdriver](#) (1)
- [Spudger](#) (1)
- [Tweezers](#) (1)
- [Plastic Cards](#) (1)

Step 1 — iPad Air LTE Teardown



- Eerie dimensional changes are afoot: the Air is 20% thinner, 28% lighter, and 24% reduced in volume from the 4th-gen iPad. And there are more good scares lurking under its otherworldly skin:
 - 9.7-inch, in-plane-switching LCD with 2,048 x 1,536 resolution at 264 ppi
 - Dual-core A7 CPU with 64-bit architecture
 - M7 motion-tracking coprocessor
 - 5-megapixel rear iSight camera capable of recording 1080p video; 1.2-megapixel 720p front-facing camera
 - 802.11n dual-antenna MIMO Wi-Fi
 - Support for 14 LTE bands, DC-HSPA+, UMTS, GSM/EDGE, CDMA, and EVDO
 - 16, 32, 64, or 128 GB storage

Step 2



- This is basically how we take apart iPads.

Step 3



- There doesn't seem to be a bewitching levitation feature on this tablet, despite the picture on the box.
- New iPad, new model number: This iPad Air can be identified by the model number A1475.
- ⓘ It's been many a full moon since the [Salem witch trials](#) of the 1690s, but sneaking into this tightly-built device is going to be nothing short of witchcraft.

Step 4



- Lightning Port? Check. Speaker grilles? Check. Camera? Check. Buttons? All the hallmarks of a [jack-o-lantern](#) tablet are in place.
- The top edge now sports a dual mic; never again will you be [haunted](#) by background noise.
- Volume is now adjusted by two separate buttons, a minor revision from the rocker switch on the previous full-size iPad.
- The speakers have gone stereo and moved to either side of the Lightning connector, à la iPad Mini. It didn't bring a costume, but [this bro can morph](#).

Step 5



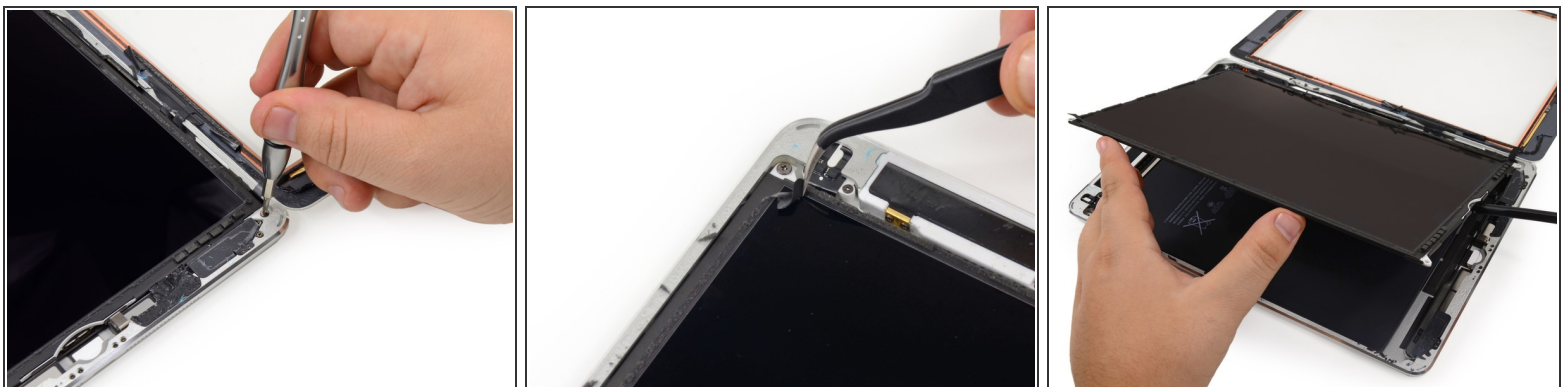
- Trick or treat? How about we pull out our little [bag of tricks](#) and treat this iPad to some iOpening?
- As usual, Apple has secured the digitizer glass in place with more than ample amounts of adhesive.
- Getting into this iPad is a bigger pain in the neck than a [date with a vampire](#)—but no amount of iPad blood can spook our stalwart [iOpener](#).


Step 6



- [Pop pop!](#) Oh the glorious sound of an iPad popping open, with a [mysterious coin](#) for mysterious scale.
- *A twenty-cent coin! They don't have those in the U.S.!*
 - You're right, astute teardown reader! That is, in fact, an Australian coin. If you hadn't noticed, this whole teardown has been upside-down, courtesy of our favorite minion [Walter](#), who survived the arduous trek down under.
- Alright, enough clowning around! It's time to open this iPad up (like a book of [scary stories](#)).

Step 7



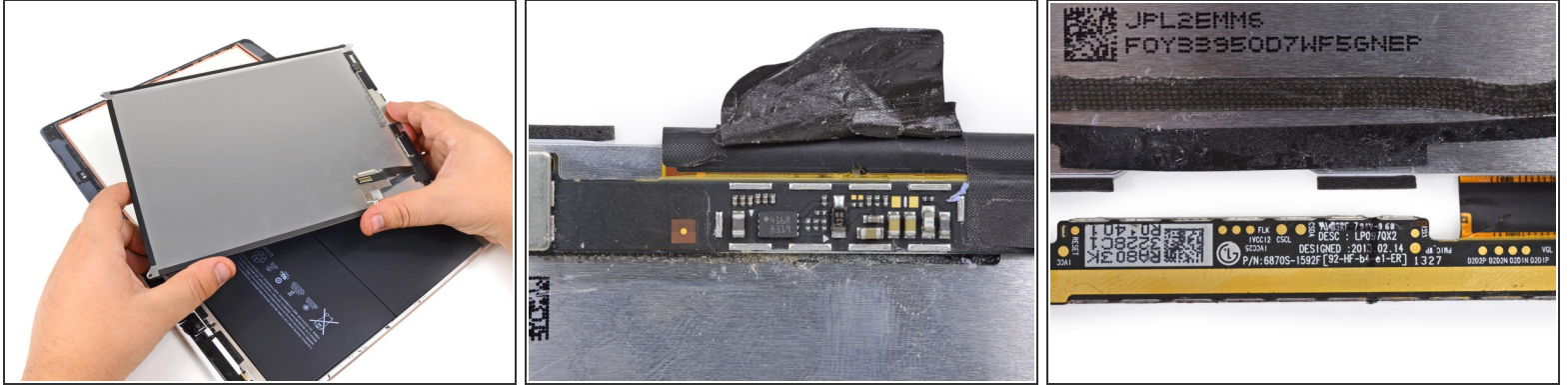
- Double, double, boil and brew, with a witch's cackle we remove that screw.
-  Little screws can drive you batty, but lucky for us, we've got our magic wands [screwdrivers](#).
- Eye of newt and toe of frog, this LCD's connected—but not for long.

Step 8



- The curtains go up, and it's a [monster \(battery\) mash](#):
 - The Air's 3.73 V, 32.9 WHr, two-cell power plant is decidedly less monstrous than the previous iPad's 43 WHr, three-cell behemoth.
- Despite the iPad's skeletal slim-down Apple claims that, due to an increase in efficiency, you can still watch the [Great Pumpkin](#) at least 20 times in a row.
- Ogle all you want, but this battery isn't coming out...yet.

Step 9



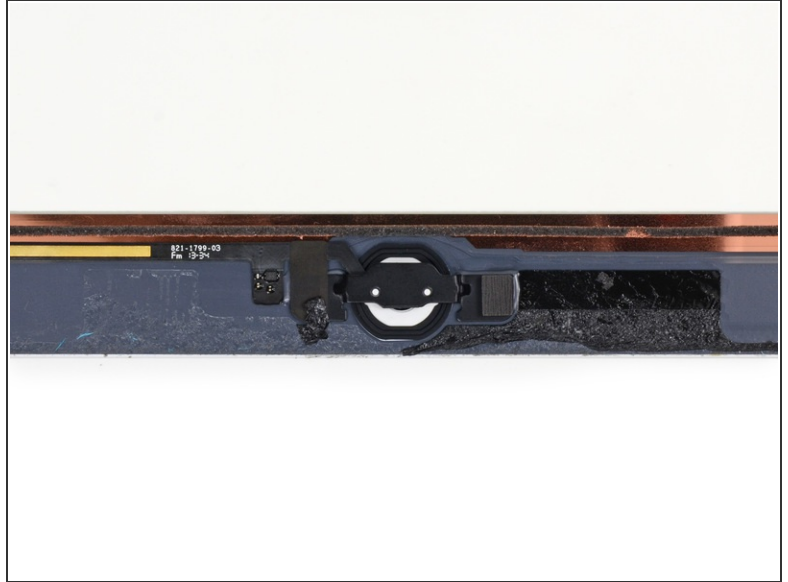
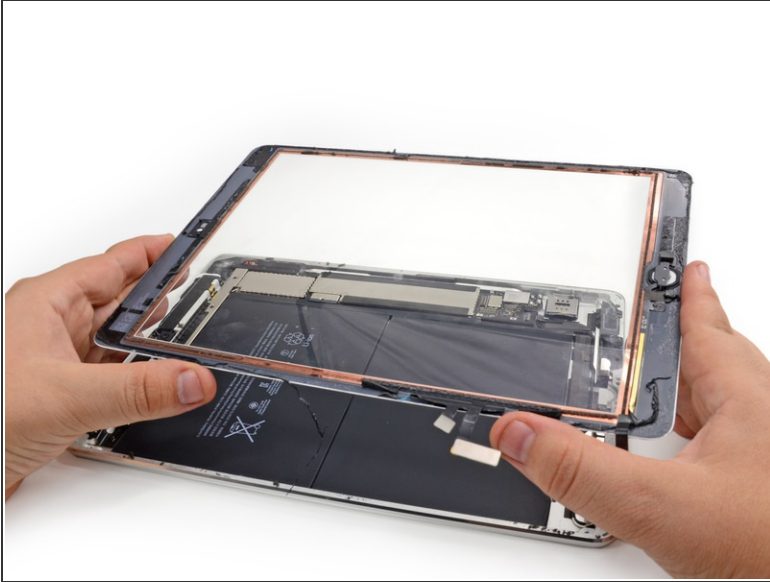
- The 9.7" display's specs remain unchanged from the iPad's previous outing, but Apple claims an uncanny 20% reduction in panel thickness.
- Our display, model LP097QX2, was supplied by LG.
- The LCD remains separate from the front panel glass. Is there a spirit of repairability lurking in this otherwise dauntingly difficult device?

Step 10



- What looks like a ZIF, and quacks like a ZIF, but isn't quite a ZIF connector? We don't know, but that's what we've got on our hands with this home button ribbon cable.
 - Although unidentified, it shows more design consideration than [Dr. Frankenstein](#).
- i** Speaking of Frankenstein, we've noticed a bit of the good doctor's methodology in the Air. It seems like Apple took an iPad Mini and transmogrified it to a regular iPad's size.

Step 11



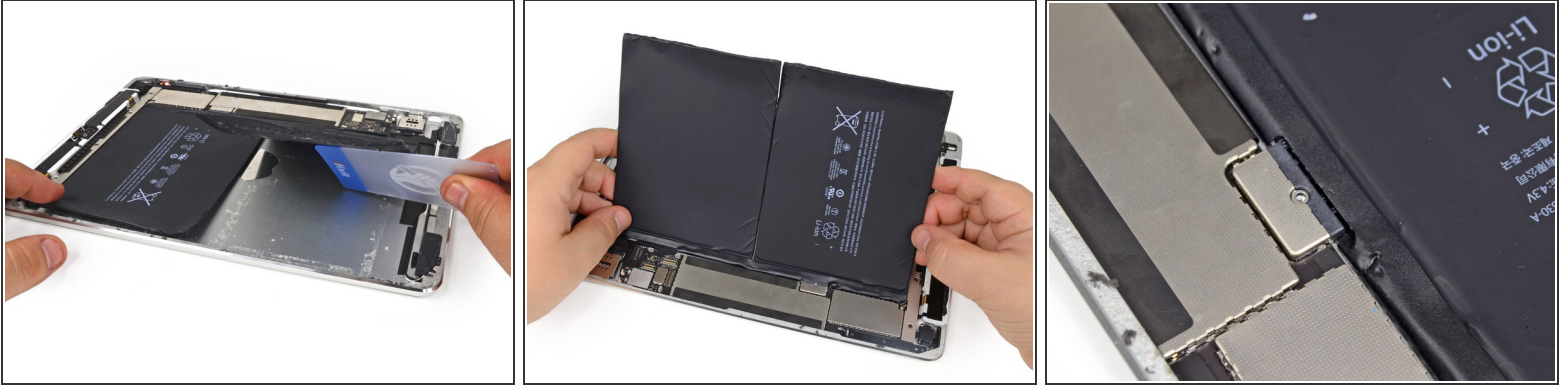
- Is it a window to the underworld or a digitizer/front glass assembly? Probably the latter, but we're not taking any chances; we set it gingerly aside.
- Despite the new cable dressing up this home button, Apple's Touch ID fingerprint sensor is nowhere to be found; it remains exclusive to the [iPhone 5s](#)...for now.

Step 12



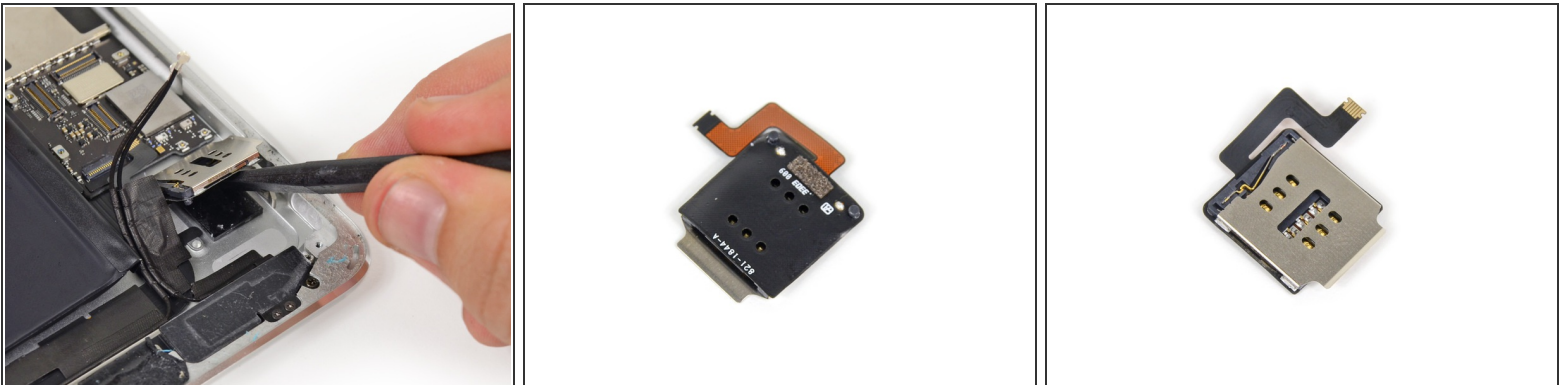
- For the second time tonight, we pull out our [iOpener](#) for some crazy glue-busting action.
- We're hoping that this trend won't stand the [test of time](#), and that glued-in batteries will become phantoms of the past.
- In the meantime, it's nuke, heat, scrape, repeat.

Step 13



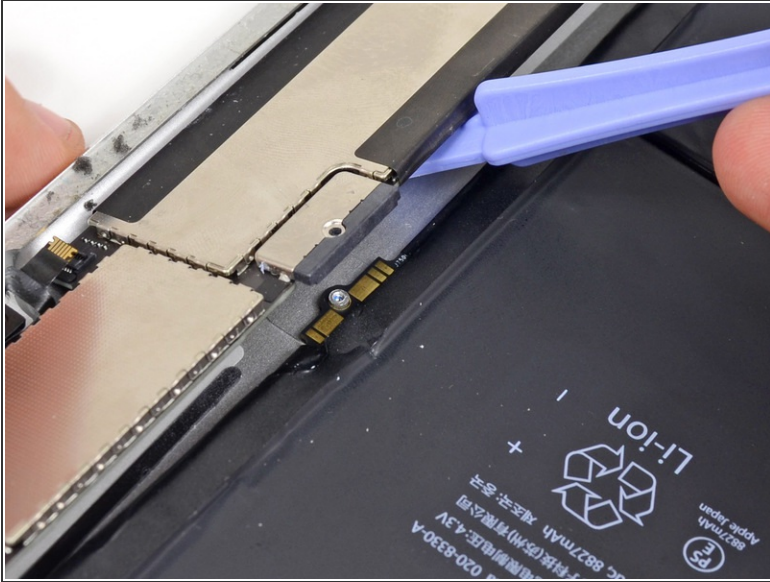
- Grab your grave-robbing ~~shovels~~ plastic cards, 'cause it's time to exhume this sucker—er, battery.
- What is this devilry? The battery is pinned by some form of dark magic—or maybe a stray screw?
- Stateside, we get this one, last, coherent message before strings of expletives:
 - [7:29:22] Walter Galan: It's the worst battery ever.
- Not even removing this mysterious screw helps. It's almost enough to make us cry for our [mummy!](#)

Step 14



- We employ a little black ~~magic~~ spudger to extract the SIM card tray.
 - Yesteryear's micro-SIM has given way to this year's nano-SIM. Next year: pico-SIMs?
- And while it is glued in (boo), we are happy to see it as a modular component, separate from the logic board.
 - ❗ We'll call this a repairability-neutral finding.

Step 15



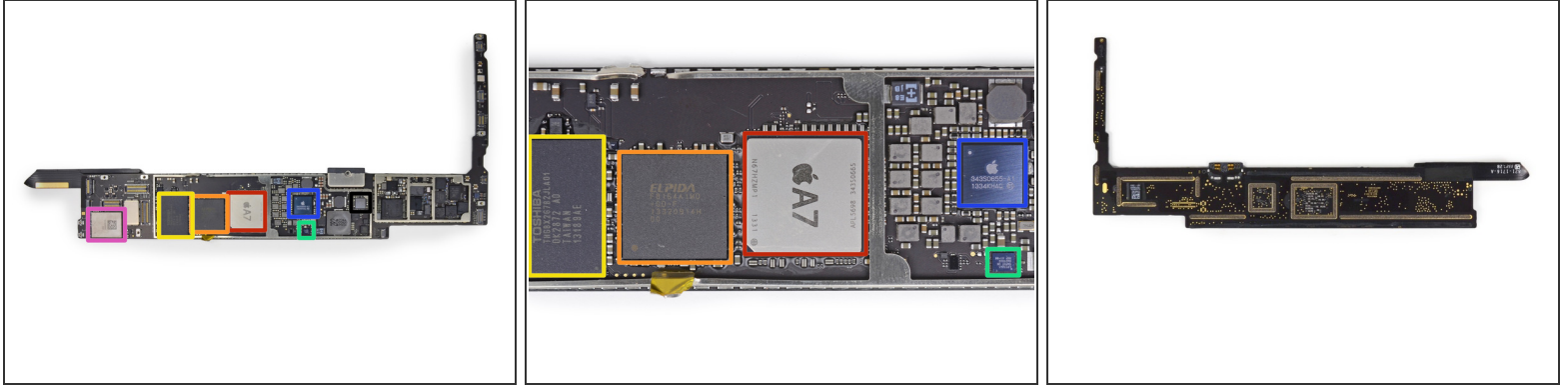
- We resume the quest to liberate the battery, and under the logic board we find the culprit in the curious case of the trapped time bomb (commonly known as a battery).
- Spring contacts on the logic board clamp down on the corresponding tab on the battery, effectively trapping it and complicating any future repair.
- This battery is super frustrating; we're not [Li-ion](#).

Step 16



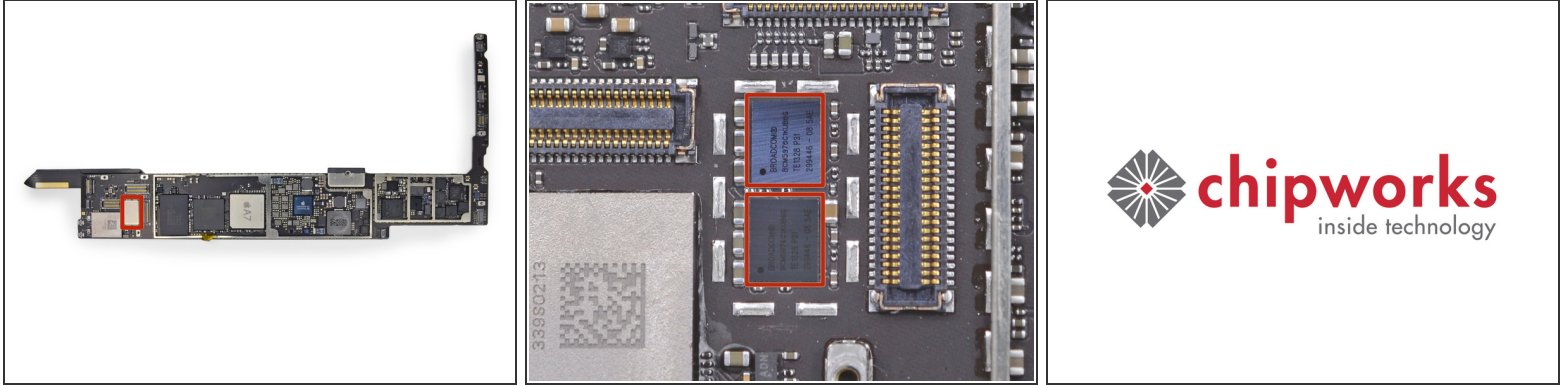
- This battery creaks worse than the door to a haunted mansion as we ease it out of the case.
- In the process, the battery warps to a state resembling the Grimm Reaper's scythe.
- ⓘ Warped batteries scare the living daylights out of us. [Bad things](#) happen when batteries get punctured.

Step 17



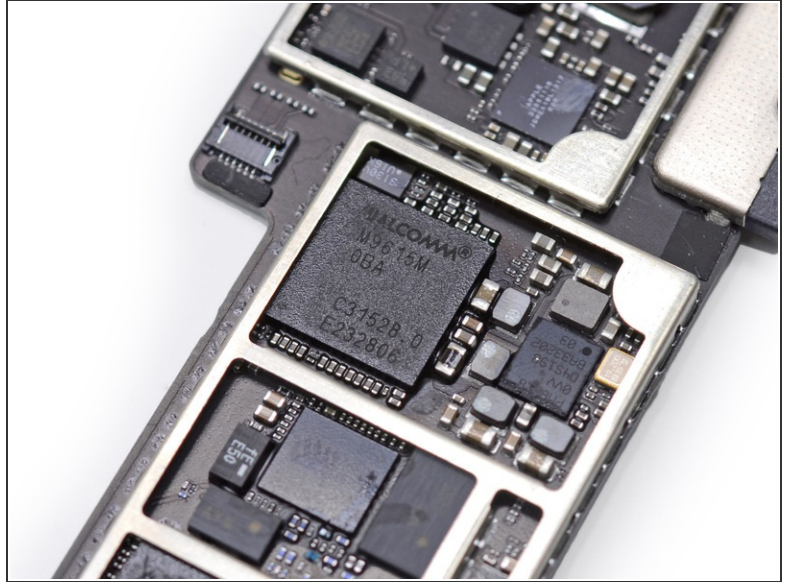
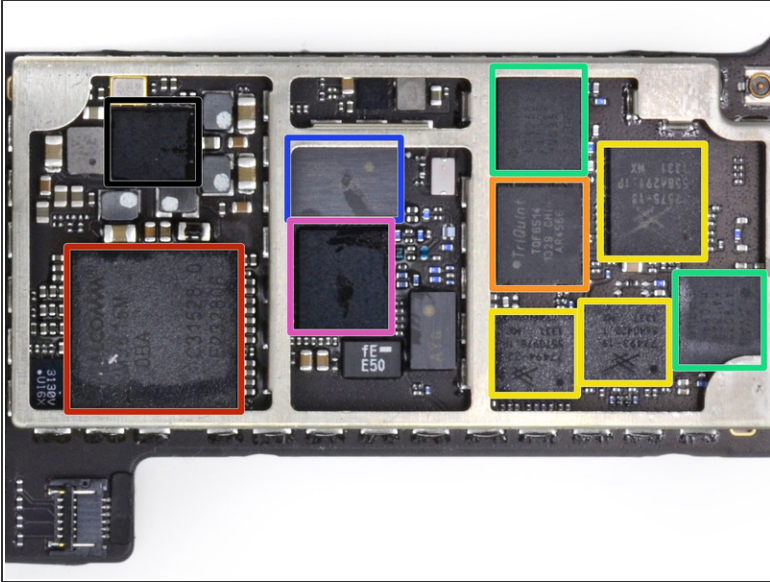
- We leave the boring backside in favor of the green PCB fields of the front. Planted in this logic board patch are:
- Apple APL5698 A7 Processor—a slightly different version from the APL0698 in the [iPhone 5s](#)
- Elpida F8164A1MD 1 GB LPDDR3 SDRAM
- Toshiba THGBX2G7B2JLA01 16 GB NAND Flash
- NXP LPC18A1 (Apple M7 Motion Co-Processor)
- Apple 343S0655-A1—from our friends at [Chipworks](#), this looks to be a Dialog Power Management IC
- USI 339S0213 Wi-Fi Module
- Apple 338S1116 Cirrus Audio Codec, also found in the [iPhone 5c](#)

Step 18



- A quick peek under a sneaky EMI shield near the US1 Wi-Fi module...
- ...Reveals a pair of Broadcom BCM5976C1KUB6G Touch Screen Controllers, similar to the [BCM5976A0KUB2G](#) found in the trackpads of various MacBooks.
- ⓘ While we're in the thick of chip identification, we want to send a big shoutout of thanks to our friends at [Chipworks](#), who stayed up late tonight to help us pick out all the teeny tiny components.

Step 19



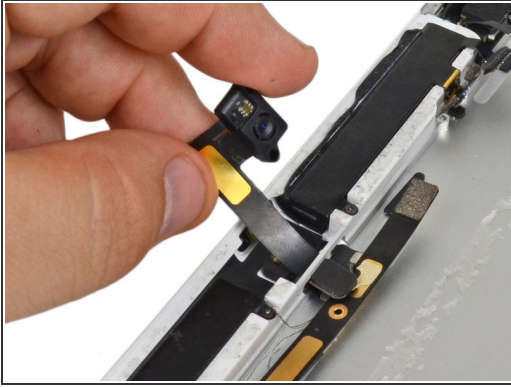
- It wouldn't be an oversized iPhone without the phone parts—this end of the logic board sports all of the RF components.
- Qualcomm [M9615M](#) LTE Processor with 1 Gb (128 MB) of DRAM
- TriQuint TQF6514 RF Power Amplifier Module—similar to the 6414 in the iPhone 5s
- Three Skyworks SKY77-series LTE RF Power Amplifier/Duplexer Modules
- Two Avago A79-series LTE RF Power Amplifier/Duplexer Modules
- 227 LG—likely a Murata Antenna Switch/Filter Module
- [Qualcomm WTR1605L](#) LTE/HSPA+/CDMA/EDGE/GPS Transceiver
- Qualcomm PM8018 PMIC

Step 20



- Just when we think there's no hope for this werewolf of a device, it shows its human face. Finally, a modular part: the Lightning connector. (Not that it was easy to get to.)
- Before the thunder even rolls, the Lightning port is gone.
- On a roll of our own, we remove what appear to be the Wi-Fi and Bluetooth antennas from the rear case.
- ❗ With two antennas and the use of [MIMO technology](#), iPad touts twice the Wi-Fi performance of past models.

Step 21



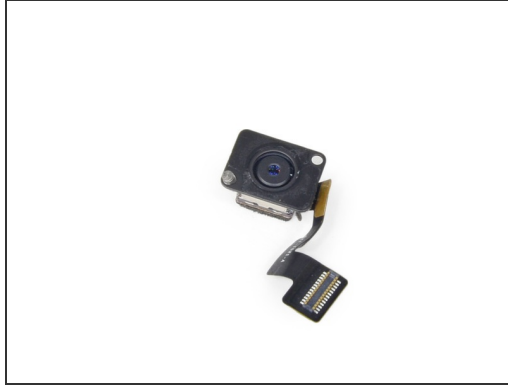
- For our next trick, we magic away the front-facing camera. You'll have to take your costume pics the [old fashioned way](#).
- Ho, hum: The 1.2-megapixel, 720p FaceTime camera fails to send any shivers down our spine.

Step 22



- More fun-sized treats:
 - [What's this?](#) We carve the headphone [jack\(-o-lantern\)](#) out.
 - Catch these cell antennas while you can—you won't find them in the strictly Wi-Fi version. They're a [huge phone](#) exclusive.
 - A quick 180°, and the speakers become our next victim. Shrouded in mystery, Apple calls these speakers "built-in," opting to leave the maker unspecified.

Step 23



- We're [bobbing for apples](#)!
- Sticking our spudger in for a dunk, we come up with another camera. This time it is the 5MP rear-facing camera.

Step 24



REPAIRABILITY SCORE:



- iPad Air Repairability Score: **2 out of 10** (10 is easiest to repair)
- The LCD is easy to remove once the front panel is taken off the iPad.
- The battery is not soldered to the logic board. We'll give it that.
- Just like in previous iPads, the front panel is glued to the rest of the device, greatly increasing the chances of cracking the glass during a repair.
- Gobs, gobs, and goblins of adhesive hold everything in place. This is the most difficult battery removal procedure we've seen in an iPad.
- The LCD has foam sticky tape adhering it to the front panel, increasing chances of it being shattered during disassembly.
- You can't access the front panel's connector until you remove the LCD.

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